AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of determining a line pattern or a space ~~between the line patterns arranged in plural line~~ pattern[[s]] on a sample, comprising the steps of:

scanning a sample~~portion~~ including ~~edge of~~ line and space pattern~~s on the sample~~ with a charged particle beam;

forming ~~a derivative waveform based on~~ a profile waveform based on ~~formed by detecting~~ charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform; ~~a first distance between a top of the peak and a foot portion of the peak of one side in the peak of the derivative waveform, and a second distance between a top of the peak and a foot portion of the peak of the other side in the peak of the derivative waveform; and~~

determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks;

determining a target location for measurement of said sample based on the determined positions of said line and space patterns; and

measuring said sample.

~~judging the longer distance side in the both side as the line pattern or the shorter distance side in the both side as the space between the line patterns, based on the comparing the first distance with the second distance.~~

2. (Currently Amended) A method of determining a line pattern or a space pattern on a sample~~between the line patterns arranged in plural line patterns~~, comprising the steps of:

scanning a sample~~portion~~ including ~~edge of~~ line and space pattern~~s on the sample~~ with a charged particle beam;

forming ~~a derivative waveform based on~~ a profile waveform based on ~~formed by detecting~~ charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;~~a first distance between a top of the peak and a foot portion of the peak of one side in the peak of the derivative waveform, and a second distance between a top of the peak and a foot portion of the peak of the other side in the peak of the derivative waveform; and~~

comparing for each peak of said profile waveform, the magnitudes of said two evaluation values acquired from said positive and negative peaks;

determining a portion of a profile of said derivative waveform, which corresponds to a larger evaluation value of the two evaluation values acquired from said positive and negative peaks, to be a convex portion, and determining a portion of the profile of said derivative waveform, which corresponds to a smaller evaluation peak of the two evaluation values acquired from said positive and negative peaks, to be a concave portion;

determining a target location for measurement of line and space patterns based on said concave and convex portions that have been determined for each peak of said profile waveform; and

measuring said sample.

~~judging the longer distance side in the both side as the line pattern or the shorter distance side in the both side as the space between the line patterns, based on the comparing the first distance with the second side thereof, if the first distance is smaller than the second distance.~~

3. (Currently amended) The method of determining ~~the concavity and/or convexity~~ a line pattern or a space pattern on a sample according to claim 1 or 2, wherein the charged particle beam is incident on the plane of a substrate perpendicularly.

4. (Currently amended) The method of determining ~~the concavity and convexity~~a line pattern or a space pattern on a sample according to claim 3, wherein said profile waveform is

created based on a charged particle emitted from a location of said sample that has been scanned as the charged particle beam that is perpendicularly incident on the sample is scanned by a scanning deflector.

5. (Currently amended) The method according to claim [[1 or]] 2, wherein the position of a pattern on said sample is identified based on the information about the concave and/or convex portions that have been determined.

6. (Currently amended) The method according to claim 1 or 2, wherein a convex-concave pattern formed on a substrate is scanned by a charged particle beam, a profile waveform is created based on a reflected or secondary charged particle emitted from a scanned location, and a specific position of said pattern on said substrate is detected based on pattern convex-concave information obtained by said method of determining ~~the concavity and convexity~~ a line pattern or a space pattern on a sample.

7. (Currently amended) The method according to claim 6, wherein a comparison is made with concavity-convexity information about a pre-registered model, in order to detect a specific position on said pattern on said sample.

8. (Currently amended) The method according to claim 6, wherein a comparison is made with the profile shape of a pre-registered model, and an error is detected if an evaluation value indicating the difference in their profile shapes exceeds a predetermined value.

9. (Currently amended) The method according to claim 6, wherein a comparison is made with the number of edges in a pre-registered model, and an error is detected if the numbers of edges exceed a predetermined value.

10. (Currently Amended) A method of determining a line pattern or a space ~~between the line patterns arranged in plural line~~ pattern[[s]] on a sample, comprising the steps of:

scanning a portion including an edge of line pattern on the sample including a plurality of convex and[[/or]] concave patterns formed thereon with a charged particle beam;

forming ~~a derivative waveform based on~~ a profile waveform ~~formed by detecting a~~based on charged particles emitted from the scanned portion of the sample;

forming a derivative waveform of said profile waveform;

acquiring evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;~~a first distance between a top of the peak and a foot portion of the peak of one side in the peak of the derivative waveform, and a second distance between a top of the peak and a foot portion of the peak of the other side in the peak of the derivative waveform; and~~

determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks;

determining a target location for measurement of said sample based on the determined positions of said line and space patterns; and

measuring said sample.

~~judging the longer distance side in the both side as the line pattern or the shorter distance side in the both side as the space between the line patterns, based on the comparing the first distance with the second distance.~~

11. (Currently Amended) A charged particle beam apparatus comprising:

a charged particle source,

a scanning deflector for scanning a charged particle beam emitted by said charged particle source,

a detector for detecting a charged particle emitted by a sample irradiated with said charged particle beam, and

a control processor that comprises:

a profile waveform forming means for forming a profile waveform of a portion of the sample that has been irradiated with a charged particle beam based on a detection output of the detector;

a derivative waveform forming means for forming a derivative waveform based on the formed profile waveform;

an acquiring means for acquiring~~a first distance between a top of the peak and a foot portion of the peak of one side in the peak of the derivative waveform, and a second distance between a top of the peak and a foot portion of the peak of the other side in the peak of the derivative~~ evaluation values from a positive peak and a negative peak of said derivative waveform, said positive peak and negative peak corresponding to each peak of said profile waveform;~~ and~~

a determining means for determining the positions of line and space patterns based on a comparison between the magnitudes of said evaluation values acquired from said positive and negative peaks; and

a determining means for determining target locations for measurement of said sample based on the determined positions of said line and space patterns.

~~judging means for judging the longer distance side in the both side as the line pattern or the shorter distance side in the both side as the space between the line patterns, based on the comparing the first distance with the second distance.~~